CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME III

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Md. Zahangir Alam
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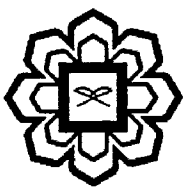

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CHAPTER 12

SPECIAL OIL FROM DATE PALM KERNEL

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ABSTRACT

A laboratory scale for extraction and analysis of date palm kernel oil (DPKO) was conducted by date palm kernel (DPK) from two types of date which were Deglect Noor (DN) and Moshkan (MO). The moisture content for DN and MO were determined to be 4.176 % and 5.335% respectively. The extracted oil was then analyzed for acid value (AV), unsaponifiable oil and total phenolic content. The AV for DN and MO were found to be 1.71 ml/g and 2.19 ml/g respectively. The total phenolic content of the extracted oil for DN and MO were 0.988 mg/ml and 0.958 mg/ml respectively while for the unsaponified oil, the total phenolic content were 0.67 mg/ml and 0.84 mg/ml respectively. Central Composite Design (CCD) was used for optimization and the maximum oil extraction was 9.67%, achieved at 10 g and 5 hours for DN and 7.30% for MO which achieved at 6g and 4 hours. Generally, DN had high percentage of oil and total phenolic content in extracted oil than MO. However, MO had high percentage of moisture content, acid value and total phenolic content. Instead of chemical difference, their physical variation also obviously could be observed. The color of DPK for DN was less brown than MO and the color of oil for DN was more yellow than that of MO.

Keywords: date palm kernel (DPK), extraction, oil, phenolic compounds.

INTRODUCTION

The date palm (*Phoenix dactylifera*) was considered to be the most important fruit tree in most of the Arabian countries (Mustafa et al., 1983). The date palm starts to produce fruits at an average age of 5 years, and continues production with an average yield of 400-600 kg/tree/year for up to 60 years (Shinwari, 1993). Each fruit was a one-seeded berry consisting of fleshy mesocarp covered by a thin epicarp; a hard endocarp surrounds the seed, and these stones (pits) are often used as an animal feed. The fruits were arranged on spikelets bearing 20-60 individual dates, and a number of such spikelets